

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

KURITA, Tomoharu et al.

Serial No.: 09/921,358

Art Unit: 1773

Filed: August 2, 2001

Examiner: Kevin R. Kruer

For: FLEXIBLE METAL-CLAD LAMINATE AND PROCESS FOR PREPARING  
THE SAME

DECLARATION

Honorable Commissioner of Patents and Trademarks  
Washington, D. C. 20231

SIR:

I, Tomoharu KURITA declare that:

1) I was born in 1963. I graduated in March, 1988 from Tokyo University of Agriculture and Technology, Faculty of Engineering, Department of Polymer Engineering.

2) I have been employed by Toyo Boseki Kabushiki Kaisya since 1988. Since 1988, I have been engaged in the designing of polyamide-imide resins and polyimide resins, and also in the development of flexible metal-clad laminate using such resins.

3) In order to demonstrate the advantage of the present invention and the difference between the present invention and the cited prior art references, the following experiments were carried out under my direction and supervision.

4) These experiments were carried out at Research Center of Toyo Boseki Kabushiki Kaisya, located at 2-2-8, Katata, Otsu, Shiga, Japan, from May 30 to June 1, 2005.

#### Experiments

##### **(1) Preparation of a polyamide-imide precursor solution**

A polyamide-imide precursor solution (a clear amber solution) was prepared following the procedure of Example X of Frost (column 8, lines 33 to 42).

##### **(2) Preparation of a flexible metal-clad laminate (Heat-treatment step)**

Flexible metal-clad laminates were prepared using the polyamide-imide precursor solution obtained in (1) above and copper foils (trade name "BHY-02-BT", manufactured by JAPAN ENERGY CORPORATION) having a surface roughness Ra of 0.35  $\mu\text{m}$  and thickness of 18  $\mu\text{m}$ , under the heat-treatment conditions of Frost. Based on the disclosure "baking at 200°C for several hours" (column 8, line 43 of Frost), two types of heat treatments were conducted: one at 200°C for two hours (case 1) and one at 200°C for ten hours (case 2).

More specifically, the polyamide-imide precursor solution was applied to the copper foils and the coatings were dried at 100°C for 5 minutes, and the resulting laminates were subjected to the heat-treatment at 200°C for two hours (case 1) or at 200°C for ten hours (case 2), thereby forming flexible metal-clad laminates.

**(3) Measurement of insoluble content**

The insoluble content of the flexible metal-clad laminate produced in (2) above was measured in accordance with the description on page 37, line 12 to page 38, line 12 of the English specification of this application.

**(4) Measurement of curling**

The radius of curvature of the flexible metal-clad laminate produced in (2) above was measured in accordance with the description on page 38, lines 13 to 25 of the English specification of this application.

**(5) Measurement Results**

Table A

Heat-treatment conditions	N-methyl-2-pyrrolidone-insoluble content	Radius of curvature
200°Cx2 hours (case 1)	0%	7.0 mm
200°Cx10 hours (case 2)	0%	7.0 mm

**Consideration**

As seen from Table A, a resin film prepared using the polyamide-imide precursor solution under the heat-treatment conditions of Example X of Frost (200°Cx2 hours and 200°Cx10 hours) had an insoluble content of 0%.

As seen from Table A, a flexible metal-clad laminate prepared using the polyamide-imide precursor solution under the heat-treatment conditions of Example X of Frost (200°Cx2 hours and 200°Cx10 hours) sharply curled and had a radius of

curvature of 7.0 mm.

I, the undersigned, declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: June 16, 2005

Tomoharu Kurita  
Tomoharu Kurita